

SECTION 7 | TRANSPORTATION, UTILITIES, AND MUNICIPAL ACTIVITIES

225. This section evaluates the effect of lynx conservation efforts on transportation, utility, and municipal activities in the study area. These activities represent a potential threat to the species or its habitat by increasing the likelihood of vehicle and species collisions, restricting movement via habitat fragmentation, or causing direct habitat loss.¹⁸⁵ This section first summarizes the estimated economic impacts, and then provides an activity-specific analysis of pre- and post-designation economic impacts of lynx conservation efforts.

7.1 SUMMARY OF IMPACTS

226. Forecast impacts to transportation, utility and municipal projects from 2006 – 2025 include:

Pos-designation impacts in areas proposed for designation

- Undiscounted: \$34.9 million - \$55.1 million
- Present value applying a seven percent discount rate: \$20.6 million - \$31.5 million (annualized \$1.9 million - \$2.9 million)
- Present value applying a three percent discount rate: \$27.1 million - \$42.3 million (annualized \$1.8 million - \$2.8 million)

Post-designation impacts in areas considered for exclusion

- Undiscounted: \$706,000 - \$962,000
- Present value applying a seven percent discount rate: \$400,000 - \$545,000 (annualized at \$37,800 - \$51,500)
- Present value at applying a three percent discount rate: \$541,000 - \$737,000 (annualized at \$36,400 - \$49,600)

227. Since 2000, all transportation, utility, and municipal projects incorporating lynx conservation efforts within the states containing the proposed critical habitat were in Minnesota and Montana. These projects, however, all occurred outside of the study area. Consequently, no pre-designation costs of lynx conservation are estimated for transportation projects, utilities, or municipal projects.

¹⁸⁵ Ruediger, B., et. al. 2000. Canada lynx conservation assessment and strategy 2nd Edition. August 2000 (as amended Oct. 23-24, 2001, May 6-8, 2003 and Nov. 12-13, 2003). USDA Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Forest Service Publication #R1-00-53. page 32.

228. Total post-designation impacts of lynx conservation efforts on forecast projects are summarized in Exhibit 7-2; administrative costs of consultations are described in Appendix A of this analysis.
229. Of the total post-designation costs, approximately 71 percent are attributed to transportation activities, and 29 percent are attributed to utility and municipal activities. Post-designation transportation costs are based on known, upcoming projects (such as Highway 53 in St. Louis County, MN and Clearwater Junction on State Highway 83 in Missoula County, MT) and forecast numbers of projects based on state long-range transportation plans and the location and frequency of past projects.
230. FERC-licensed dams scheduled for permit renewal within the next twenty years are included as forecast utility and municipal projects. The number of other types of future utility and municipal projects is forecast based on the location and frequency of past similar activities within the study area.

EXHIBIT 7-1. FORECAST NUMBERS OF TRANSPORTATION, UTILITIES, AND MUNICIPAL PROJECTS

TRANSPORTATION, UTILITIES AND MUNICIPAL ACTIVITIES IN AREAS PROPOSED FOR DESIGNATION				
UNIT	LANDOWNER TYPE	NUMBER OF FORECAST TRANSPORTATION PROJECTS	FERC LICENSED DAMS UP FOR RENEWAL (2006-2025)	FORECAST 404 & 401 PERMITTED UTILITY ACTIVITIES
Maine	Private Timber Lands	13	0	0
	Unknown Landowner	47	2	0
Subtotal		60	2	0
Minnesota	Superior National Forest	6	0	164
	Minnesota Dept. of Natural Resources	4	5	68
	Private Timber Lands	0	1	0
	Unknown Landowner	6	9	224
Subtotal		16	15	456
Northern Rockies	Montana Dept. of Natural Resources	0	0	4
	Montana Fish, Wildlife, and Parks	1	0	0
	Montana University System	0	0	16
	Private Timber Lands	0	0	4
	Conservation NGO	0	0	4
	Unknown Landowner	2	0	160
Subtotal		3	0	188
Total		79	17	644
TRANSPORTATION, UTILITIES AND MUNICIPAL ACTIVITIES IN AREAS CONSIDERED FOR EXCULSION				
Northern Rockies	Glacier National Park	1	0	28
Total		1	0	28
Forecast projects are rounded to the nearest whole number ; costs, however, are spread across subunits proportionate to the amount of existing road mileage therein.				

EXHIBIT 7-2. ESTIMATED IMPACTS TO TRANSPORTATION, UTILITIES, AND MUNICIPAL ACTIVITIES

TRANSPORTATION, UTILITIES AND MUNICIPAL ACTIVITIES IN AREAS PROPOSED FOR DESIGNATION											
UNIT	LANDOWNER TYPE	UNDISCOUNTED COSTS		PRESENT VALUE (7%)		PRESENT VALUE (3%)		ANNUALIZED COSTS (7%)		ANNUALIZED COSTS (3%)	
		LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Maine	Private Timber Lands	\$3,700,000	\$6,600,000	\$2,100,000	\$3,750,000	\$2,840,000	\$5,060,000	\$198,000	\$353,000	\$191,000	\$340,000
	Unknown Landowner	\$13,000,000	\$23,100,000	\$7,370,000	\$13,100,000	\$9,960,000	\$17,700,000	\$695,000	\$1,140,000	\$669,000	\$1,190,000
Subtotal		\$16,700,000	\$29,800,000	\$9,470,000	\$16,900,000	\$12,800,000	\$22,800,000	\$894,000	\$1,590,000	\$860,000	\$1,530,000
Minnesota	Superior National Forest	\$3,720,000	\$5,750,000	\$1,880,000	\$2,830,000	\$2,700,000	\$4,150,000	\$177,000	\$267,000	\$182,000	\$279,000
	Minnesota Dept. of Natural Resources	\$2,360,000	\$3,700,000	\$1,160,000	\$1,770,000	\$1,700,000	\$2,600,000	\$109,000	\$167,000	\$114,000	\$178,000
	Private Mining Lands	\$9,480	\$9,480	\$5,370	\$5,370	\$7,620	\$7,620	\$507	\$507	\$488	\$488
	Private Timber Lands	\$18,500	\$23,500	\$10,500	\$13,300	\$14,200	\$18,000	\$990	\$1,260	\$953	\$1,211
	Unknown Landowner	\$5,910,000	\$8,150,000	\$3,590,000	\$4,67,000	\$4,650,000	\$6,280,000	\$339,000	\$443,000	\$312,000	\$421,000
Subtotal		\$12,000,000	\$17,600,000	\$6,630,000	\$9,120,000	\$9,070,000	\$13,000,000	\$623,000	\$879,000	\$610,000	\$879,000
Northern Rockies	U.S. Fish and Wildlife Service	\$14,000	\$19,000	\$8,090	\$11,000	\$11,000	\$15,000	\$763	\$1,040	\$735	\$1,000
	U.S. Bureau of Land Management	\$10,000	\$13,000	\$13,800	\$7,840	\$7,760	\$10,600	\$576	\$740	\$521	\$712
	Montana Dept. of Natural Resources	\$118,000	\$162,000	\$66,700	\$91,700	\$90,200	\$124,000	\$6,300	\$8,660	\$6,060	\$8,340
	Montana Fish, Wildlife, and Parks	\$2,280,000	\$2,290,000	\$2,270,000	\$2,280,000	\$2,280,000	\$2,280,000	\$215,000	\$215,000	\$153,000	\$153,000
	Montana University System	\$221,000	\$306,000	\$126,000	\$174,000	\$170,000	\$235,000	\$11,900	\$16,400	\$11,400	\$15,800
	Private Timber Lands	\$61,000	\$84,000	\$34,600	\$47,800	\$47,000	\$64,600	\$3,260	\$4,510	\$3,140	\$4,340
	Conservation NGO	\$75,800	\$105,000	\$43,000	\$59,300	\$58,100	\$80,100	\$4,060	\$5,590	\$3,900	\$5,380
	Unknown Landowner	\$3,390,000	\$4,680,000	\$1,920,000	\$2,650,000	\$2,600,000	\$3,580,000	\$182,000	\$250,000	\$175,000	\$240,000
Subtotal		\$6,180,000	\$7,650,000	\$4,480,000	\$5,320,000	\$5,260,000	\$6,390,000	\$423,000	\$502,000	\$354,000	\$430,000
Total		\$34,900,000	\$55,10,000	\$20,600,000	\$31,500,000	\$27,100,000	\$42,300,000	\$1,940,000	\$2,980,000	\$1,820,000	\$2,840,000

UNIT	LANDOWNER TYPE	UNDISCOUNTED COSTS		PRESENT VALUE (7%)		PRESENT VALUE (3%)		ANNUALIZED COSTS (7%)		ANNUALIZED COSTS (3%)	
		LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
TRANSPORTATION, UTILITIES AND MUNICIPAL ACTIVITIES IN AREAS CONSIDERED FOR EXCULSION											
Minnesota	Voyageurs National Park	\$80	\$80	\$45	\$45	\$61	\$61	\$4	\$4	\$4	\$4
	Tribal Lands	\$25,700	\$25,700	\$14,600	\$14,600	\$19,000	\$19,720	\$1,380	\$1,380	\$1,330	\$1,330
Subtotal		\$25,800	\$25,800	14,600	14,600	\$19,000	\$19,781	\$1,380	\$1,380	\$1,330	\$1,330
Northern Rockies	Glacier National Park	\$670,000	\$923,000	\$380,000	\$523,000	\$514,000	\$707,000	\$35,900	\$49,400	\$34,500	\$47,500
	BLM: Butte Resource Area	\$10,100	\$13,800	\$5,740	\$7,840	\$7,760	\$10,600	\$542	\$740	\$521	\$712
Subtotal		\$680,000	\$936,000	\$386,000	\$531,000	\$521,000	\$717,000	\$36,400	\$50,100	\$35,000	\$48,200
Total		\$706,000	\$962,000	\$400,000	\$545,000	\$541,000	\$737,000	\$37,800	\$51,500	\$36,400	\$49,600
Note: Totals may not sum due to rounding. Refer to Appendix A for information regarding administrative costs associated with consultation on transportation, utility, and municipal activities. Forecast project numbers are rounded to the nearest whole number; costs, however, are spread across subunits proportionate to the amount of existing road mileage therein.											

7.2 METHODS AND ASSUMPTIONS

231. To estimate lynx conservation costs associated with transportation and utility projects, this analysis applies five steps.

1. **Forecast the number of transportation and utility projects over the next twenty years.** Estimates of project numbers were based on a combination of: a) direct communication with FHWA, State DOTs, USCOE, FEMA, and FERC to identify the number and locations of planned projects,; and b) the frequency and location of past projects.
2. **Determine potential lynx conservation efforts associated with transportation and utility projects and associated costs.** This analysis assumes lynx conservation efforts outlined in the LCAS specific to transportation and utilities projects will be adopted. For transportation activities, these conservation efforts include remote monitoring, construction of habitat continuity measures (highway underpasses and overpasses), bridge lengthening, erecting attendant fencing, and development of maps and associated databases highlighting "key habitat linkages". For utility and municipal activities, conservation efforts include remote monitoring. Estimated costs of these conservation efforts are based on communication with affected agencies and are described in Exhibit 7-3. Of note, many of these conservation efforts were implemented for the benefit of multiple species, and not solely for the lynx.
3. **Estimate the probability of a future project incorporating the various lynx conservation efforts.** The probability of a project requiring the various lynx conservation efforts described in Exhibit 7-3 is based on the frequency of these conservation efforts being incorporated into past transportation projects that considered the lynx.
4. **Calculate costs per project.** Exhibit 7-4 describes the per project costs of transportation activities, calculated by multiplying the costs of conservation efforts by their probability of occurrence.
5. **Derive estimated impacts by subunit.** Subunit level impacts are estimated by multiplying the expected level of activity by per project costs.

EXHIBIT 7-3. LYNX CONSERVATION EFFORTS ASSOCIATED WITH TRANSPORTATION ACTIVITIES

CONSERVATION EFFORT		ESTIMATED COST
1	Erect wildlife crossing structures (highway underpass). ^{a, c, d}	\$112,000- \$219,000 (per project) ^{1,2}
2	Erect wildlife crossing structures (highway overpass). ^a	\$1.7- \$2.3 million (per project)
3	Erect attendant fencing (based on an average of 6 miles per project). ^{a, c, d,}	\$5165,000 (per project) ^{1,3}
4	Implement monitoring of wildlife crossings before, during, and after construction of the project and use findings to guide and adapt the design, maintenance, and potential modification of the crossing structures constructed during the project and in the future. ^{a, c}	\$52,000- \$74,000 (per project) ¹
5	Prepare monitoring plan that documents the number and type of dead and injured wildlife and develop program for evaluating levels of wildlife use at a subset of the existing interstate highway bridges and culverts. ^b	
6	One year after the completion of a three-year monitoring of wildlife use of the crossings, provide the Service with a comprehensive final report based on compilation of all data gathered during the monitoring effort. ^d	
7	Upon locating dead or injured lynx, notification must be made within 24 hours to Service field office. ^{a,b}	
8	Employ motion-detecting cameras or track boxes to help determine location and time of lynx crossing. ^c	\$13,000- \$18,0001 (per project)
9	In coordination with the Service, maps and associated databases will be developed to illustrate important wildlife linkage zones, high priority conservation opportunities, highway segments that may be problematic for wildlife crossings, and opportunities for new crossings enhancements. ^b	\$1,000,000 (for each Unit over 20 years) ^{1,4}
10	Bridge Lengthening. ^c	\$83,000- \$277,000 (per bridge) ^{1,2,5}

Notes: Conservation efforts numbered 1 through 6 and 10 are implemented for the benefit of multiple species, and not solely for the the lynx.

Sources:

a U.S. Fish and Wildlife Service. Biological Opinion for proposed reconstruction of US Highway 93 in Missoula and Lake counties, Montana. October 19, 2001.

b U.S. Fish and Wildlife Service. Biological Opinion for ongoing effects of median barriers already installed along Interstate 90 east of Lookout Pass in Mineral County, Montana. March 29, 2004.

c U.S. Fish and Wildlife Service. Biological Opinion for proposed Trunk Highway 53 project located in St. Louis County, Minnesota. February 4, 2005.

d U.S. Fish and Wildlife Service. Biological Opinion for proposed upgrade of a segment of Trunk Highway 1 in Lake County, Minnesota. December 23, 2004.

1 Written communication with Pat Basting, Wildlife Biologist, MTDOT, March, 15, 2006

2 Written Communication with Mike Tardy, Assistant Engineer for Program Delivery, District 1, MNDOT, February 22, 2006.

3 This figure is based on the \$85,000 cost to erect attendant fencing for the Clearwater Junction North Project in Missoula, Montana. According to the 2006-2008 State Transportation Improvement Program, the project is 1.64 miles long.

4 MTDOT is integrating GIS technology in their species monitoring efforts over the next ten years. The effort could cost as much as \$500,000, however, it should be noted that this is a statewide effort rather than a per project effort. This analysis estimates that total costs related to GIS mapping will be \$1,000,000 over the next twenty years.

5 Assigned to project cost estimates where bridges are known to exist in the project area.

EXHIBIT 7-4. SUMMARY OF PER PROJECT COST ESTIMATES FOR TRANSPORTATION ACTIVITIES

CONSERVATION EFFORT	LOW COST	HIGH COST	PROBABILITY OF INCORPORATION*	PER PROJECT LOW (2006\$)	PER PROJECT HIGH (2006\$)
Wildlife Crossing (Overpass)	\$1.7 million	\$2.3 million	0.07	\$121,000	\$164,000
Wildlife Crossing (Underpass)	\$112,000	\$219,000	0.21	\$24,000	\$46,900
Attendant Fencing	\$312,000	\$312,000	0.07	\$66,800	\$66,800
Maps and Databases	\$250,000	\$250,000	0.85	\$53,500	\$53,500
Monitoring	\$57,000	\$74,000	0.78	\$12,200	\$15,900
Bridge Lengthening	\$83,000	\$277,000	0.71	\$17,700	\$59,300
Total	\$2.1 million	\$3 million		\$261,000	\$479,000
* Probability of incorporation based on review of 14 transportation projects that include lynx and wildlife conservation efforts.					

7.3 TRANSPORTATION ACTIVITIES

232. Transportation activities affecting lynx or its habitat include bridge construction, repair, or replacement, and road construction, repair, widening, or improvements. These activities reduce connectivity within the boreal forest landscape and increase the species' vulnerability to vehicle collision. Lynx are highly mobile and frequently cross roads during dispersal, exploratory movements, or travel within home ranges. Highway projects may also directly affect the amount of feeding and denning habitat for the species by converting natural forests into road surface, rights-of-ways, or associated facilities such as maintenance areas or gravel pits.¹⁸⁶
233. Approximately 235 miles of road falls within Unit 1, 705 miles in the Unit 2, and 204 miles in Unit 3. No major roads intersect with Unit 4.

7.3.1 PRE-DESIGNATION ECONOMIC IMPACTS TO TRANSPORTATION ACTIVITIES

234. The lynx consultation history includes nine biological opinions on transportation projects in Maine, Minnesota, Montana, and Washington States; none of these were within the study area. These consultations involved the Federal Highway Administration (FHWA), Minnesota Department of Transportation (MNDOT), and Washington State Department of Transportation (WADOT), and addressed the construction, expansion and repair of highways, bridges and rail projects.
235. In general, the Service has sought to monitor wildlife crossings along major roads and identify and implement a variety of conservation efforts for the lynx. Where projects are

¹⁸⁶ Ruediger (2000). Page 142.

known to occur in suitable lynx habitat, wildlife monitoring via tracking beds and remote cameras has been employed as well as the installation of infrastructure to promote habitat continuity (i.e., highway underpasses, overpasses, and culverts). In some areas, large GIS-based mapping efforts have been undertaken to prioritize the location of highway crossings to support habitat connectivity and reduce lynx mortality.

7.3.2 POST-DESIGNATION ECONOMIC IMPACTS TO TRANSPORTATION ACTIVITIES

236. Previous lynx conservation efforts have not resulted in constraints on size or location of past transportation projects as a result of lynx conservation and therefore no impacts on traffic congestion are estimated. This analysis assumes that post-designation transportation activities may experience impacts related to lynx conservation similar as described in Exhibit 7-3, but that these activities will not be precluded so as to impair regional mobility.

237. The following discussion characterizes expected levels of activity for transportation projects by unit.

Unit 1: Maine

238. The Maine Department of Transportation (MEDOT) has a total of nine upcoming projects within the boundaries of proposed critical habitat over the next three years.¹⁸⁷ Based on the estimated frequency of projects over the next three years, this analysis assumes that there will be 60 transportation projects within the Maine critical habitat unit over the next 20 years (nine projects every three years). These projects range from replacing a culvert or strut to completely rebuilding particular stretches of highway. Two projects fall within the Private Timber Lands subunit (both in the town of St. John) and seven projects fall within the Unknown Landowner subunit (three projects falling in Wallagrass, two in Allagash, one in Cross Lake, and another in Winterville). This analysis assumes that each forecast project will incorporate lynx conservation efforts as described in Exhibit 7-3 and fall within the same subunits of currently known projects. Therefore, over the next 20 years, this analysis assumes there will be 13 projects within Private Timber Lands and 47 projects within the Unknown Landowner subunit.

Unit 2: Minnesota

239. The FHWA and MNDOT will be reconstructing a segment of Trunk Highway 53, expanding it from two to four lanes. The proposed action may further fragment habitat and increase road hazards for lynx within the study area. MNDOT plans to modify the project such that two culverts will be changed to four bridge structures (\$1.5 million) and six bridges will be lengthened by 25 feet each (\$500,000).¹⁸⁸

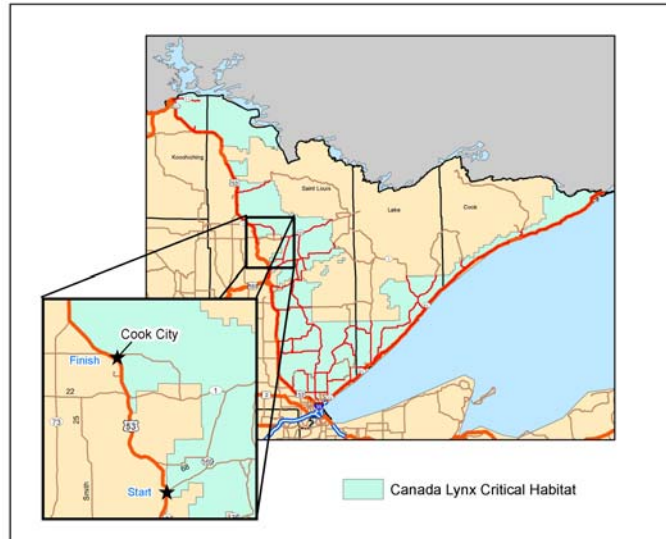
240. Although the project begins and ends within the study area, as highlighted in Exhibit 7-5, approximately half of the project falls outside of the study area boundaries. Therefore,

¹⁸⁷ Based on list of upcoming projects. Written correspondence from MEDOT, April 4, 2006; April 6, 2006.

¹⁸⁸ Written communication with Mike Tardy, Assistant Engineer for Program Delivery, District 1, Mn/DOT, received February 22, 2006.

this analysis only quantifies costs of conservation efforts for the portion of the project that falls within the study area.

EXHIBIT 7-5. MNDOT RECONSTRUCTION OF TRUNK HIGHWAY 53



241. The Northeast Minnesota Long Range Plan outlines MNDOT transportation projects from 2008 to 2030.¹⁸⁹ Although these projects are ultimately limited by funding availability, MNDOT has planned a series of projects for Trunk Highway 61 and Trunk Highway 169, two major roads passing through the study area.
242. Trunk Highway 61 runs along the North Shore of Lake Superior from Duluth to the Canadian border at Grand Portage. Assuming full funding to meet MNDOT performance based measures by 2030, 15 separate projects are planned to increase safety along the Trunk Highway 61 corridor from Two Harbors to Grand Marais.¹⁹⁰ These projects are broadly described as preventative safety measures that include road reconstruction to widen shoulders and "measures... to meet other Mn/DOT reconstruction design standards". MNDOT has also agreed to build segments of the Gitchi-Gami State Trail in their right-of-way when reconstructing adjacent road segments. This analysis assumes each of these 15 projects will be subject to a range of lynx conservation efforts.
243. MNDOT is also planning a reconstruction of Trunk Highway 169 from the north junction of Trunk Highway 53 to the west junction of Trunk Highway 1. Plans include shoulder

¹⁸⁹ Published by the Minnesota Department of Transportation (District 1), Northeast Minnesota Area Transportation Partnership, and the Arrowhead Regional Development Commission, August, 2005.

¹⁹⁰ Northeast Minnesota Long Range Transportation Plan (2008-2030), Minnesota Department of Transportation (District 1), Northeast Minnesota Area Transportation Partnership, and the Arrowhead Regional Development Commission, August, 2005.

widening and the construction of passing lanes.¹⁹¹ This analysis also assumes this project will be subject to the range of lynx conservation efforts.

Unit 3: Northern Rocky Mountains

244. Of the three upcoming projects falling within the study area from 2006 to 2008, only one is expected to require species conservation efforts: the minor reconstruction of Clearwater Junction on Montana State Highway 83 just north of State Highway 200. The Montana Department of Transportation (MTDOT) will undertake the minor road reconstruction and incorporate one wildlife overpass and one wildlife underpass with associated fencing. These habitat continuity efforts service lynx, other threatened and endangered species like the Grizzly bear and Gray wolf, and other wildlife species including white-tailed deer, mule deer, elk, black bear, mountain lion, and coyote. The estimated costs for conservation efforts on the Clearwater Junction Project range from \$2.0 million to \$2.8 million. The estimated cost for the highway overpass is \$1.7 - \$2.3 million; the underpass, \$200,000 - \$300,000; attendant fencing, \$55,000 - \$85,000; and the jump-outs, \$25,000 - \$60,000.¹⁹²
245. This analysis assumes that two projects within the study area, the repaving of State Highway 200 in Lincoln County and minor reconstruction of State Highway 271, will not incorporate conservation efforts. The LCAS cites that the paving of gravel roads is of "special concern" as is often done to facilitate an increase in traffic and speed.¹⁹³ Because State Highway 200 is already paved, this analysis assumes the repaving project will not pose a net increase threat to the species or its habitat. The LCAS also states that daily traffic volumes of 2,000-3,000 can be "problematic" while over 4,000 vehicles or more per day is considered to have "serious impacts in terms of both mortality and habitat fragmentation".¹⁹⁴ The average daily traffic on State Highway 271 is less than 400 vehicles and is therefore also assumed not to pose a threat to the lynx or its habitat.¹⁹⁵
246. The Clearwater Junction project, to commence in 2007, is the only transportation project in Unit 3 expected to experience impacts of lynx conservation. As this is the only project forecast to represent a conservation threat to the lynx from 2000 to 2008, this analysis extrapolates that there may be three more projects undertaken by the MT DOT over the next twenty years. These three forecast projects are assumed to incorporate the conservation efforts described in Exhibit 7-2. As specific locations of potential future projects are unknown, this analysis distributes forecast impacts across subunits proportionally to the length of roads existing therein.

¹⁹¹ Ibid.

¹⁹² Ibid.

¹⁹³ LCAS. Pg. 89.

¹⁹⁴ LCAS. Pg. 31.

¹⁹⁵ The MTDOT has not planned lynx-related conservation measures on State Highway 271 because of low traffic volumes. Personal communication with Pat Basting, MDOT Biologist, March 31, 2006.

Unit 4: North Cascades

247. There are no transportation-related activities forecast in the North Cascades Unit over the next 20 years. Currently, State Highway 20 is the only major road near the boundaries of the study area. The Washington State Department of Transportation (WADOT) has stated that any work in this area would be limited to preserving existing assets on State Route 20 and it does not have any new highway development plans for the North Cascades area.¹⁹⁶ Therefore, this analysis assumes there will be no construction of new roads or bridges that would pass through proposed critical habitat.

7.4 UTILITY AND MUNICIPAL ACTIVITIES

248. Utility and municipal activities may constitute a conservation threat to the lynx by disrupting connectivity of lynx habitat. Utility corridors located adjacent to highways and railroads can further widen the right-of-way and increase the likelihood of impeding lynx movement.¹⁹⁷ Other municipal activities like dam construction and inundation (influenced by size, type, and surrounding land use) may also interrupt movement of the lynx.¹⁹⁸

7.4.1 PRE-DESIGNATION ECONOMIC IMPACTS TO UTILITY AND MUNICIPAL ACTIVITIES

249. Of the past ten section 7 consultations related to utility and municipal activities since the lynx listing in 2000, only one consultation has been formal. The formal consultation involved the Federal Energy Regulatory Commission (FERC) and Allete Inc. and addressed the renewal of an operating license for the Winton Hydroelectric Project in northern Minnesota. Part of the renewal application was a recreation plan for the attendant reservoir. The Service concluded that the recreation plan would not likely jeopardize the continued existence of the lynx and therefore did not require any project modification for the benefit of the species.¹⁹⁹
250. The nine other informal consultations involved Federal Emergency Management Agency (FEMA), United States Army Corps of Engineers (USACE), and FERC and related to activities including substation construction, pipeline maintenance, and transmission line route construction.
251. None of these past projects resulted in the implementation of lynx conservation efforts. This analysis therefore includes the administrative costs of consultation only; these costs are described in Appendix A.

¹⁹⁶ Written communication with Pat Morin, Systems Analysis and Priority Programming Manager, Washington State Department of Transportation, March 27, 2006.

¹⁹⁷ LCAS Pg. 32.

¹⁹⁸ Ibid., Pg. 28.

¹⁹⁹ Winton Hydroelectric FERC Project No. 473 Public Recreation, Safety and Human Health Plan. Allete, Inc. (d.b.a. Minnesota Power, March 29, 2005; Personal communication with Susan Rogers, U.S. Fish and Wildlife, Endangered Species Coordinator, March 31, 2006.

7.4.2 POST-DESIGNATION ECONOMIC IMPACTS TO UTILITY AND MUNICIPAL ACTIVITIES

252. Past utility and municipal activities have not been burdened with lynx conservation efforts. This analysis assumes that the LCAS is the best available science to indicate the types of lynx conservation efforts that may be incorporated in future projects. The LCAS, however, does not provide specific conservation efforts for these types of projects but lists the following guidelines:
- If activities are proposed in lynx habitat, develop stipulations for limitations on the timing of activities and surface use and occupancy at the leasing stage; and
 - Minimize snow compaction when authorizing and monitoring developments.
 - Encourage remote monitoring of sites that are located in lynx habitat, so that they do not have to be visited daily.²⁰⁰
253. Accordingly, this analysis assumes forecast utilities and municipal projects will incur costs associated with remote monitoring. Per-project remote monitoring costs are based on those incurred by a past transportation project.²⁰¹ The estimated range of this conservation effort, \$13,000 and \$18,000, is applied to all forecast utility and municipal projects described below.

Utility and Municipal Projects

254. Utility projects that may occur within the study area include FEMA-funded projects and other large projects which would require a Clean Water Act 401 or 404 permit from the U.S. Army Corps of Engineers (USACE).
255. FEMA offices and their state counterparts in Maine, Minnesota, Montana, and Washington have indicated that there are no known upcoming FEMA-funded projects within the study area.²⁰² In the event of a natural disaster occurrence within the boundaries of the study area, it is possible that FEMA-funded projects will consider lynx conservation. Only two FEMA-related projects have occurred within study area since 2000, and neither incorporated project modifications following consultation regarding the lynx. Absent information on how often natural disasters may occur within the study area, this analysis assumes that they may occur with the same frequency as the recent past. This analysis therefore estimates there will be eight FEMA projects over the next 20 years within Unit 2: Minnesota. This analysis only includes the administrative costs of considering FEMA projects as described in Appendix A because: a) the nature of these projects are relatively unknown; b) past FEMA projects have not resulted in lynx conservation efforts; and c) the LCAS does not specifically address lynx conservation in the context of such projects.

²⁰⁰ LCAS, pg 7-12.

²⁰¹ Costs specific to remote monitoring provided by MDOT on March 13, 2006.

²⁰² Written communication with Arthur Cleaves, Director of the Maine Emergency Management Agency, February 2, 2006; Written communication with Monique Lay, Earthquake Program Manager at the Montana Disaster and Emergency Services Division, February 24, 2006; Written communication with Mark Eberlein, Region X Regional Environmental Officer, May 3, 2006.

256. Approximately 161 permitted utility and municipal projects occurred from 2000 to 2005 in the study area. Of these, five projects triggered informal consultation. This analysis assumes that all future 401 and 404 permitted projects will consider lynx conservation. Absent specific information regarding the nature of future utility and municipal projects, this analysis assumes that they may occur with the same frequency and in the same relative location (defined by subunit) as in recent years. Based on 2000-2005 estimates, this results in a projected 644 USACE-permitted projects occurring within the study area over the next twenty years; 456 in Unit 2 and 188 in Unit 3.

Dams

257. Dam construction and inundation is considered to be a movement barrier for lynx and can directly fragment habitat.²⁰³ In addition, an increase in water-based recreation and associated lakeshore development along reservoirs can interrupt large, isolated tracts of habitat, reduce habitat quality for snowshoe hare, and increase the potential for lynx/human interaction.²⁰⁴ There are a number of FERC licensed dams coming up for re-licensing over the next 20 years within the study area. As the operating licenses for these dams come up for renewal, changes in the operation of the dam, altering the amount of inundated acreage, downstream flows, or development of recreation plans, could alter lynx habitat.
258. According to the National Inventory of Dams database, maintained by the USACE, there are 16 dams up for their FERC license renewal within the study area in the next 20 years; 14 in Minnesota and two in Maine.²⁰⁵ All 14 hydroelectric dams in Minnesota are owned by the Allete Inc., a parent company of Minnesota Power, and will be due for license renewal in 2025. Because these dams are comparable to the Winton Hydroelectric Project (also owned by Allete Inc.) in size and storage capacity, this analysis assumes that each of the 14 dams in Unit 2, and the Brassua and Squa Pan dams in Maine, will consider lynx conservation at the time of relicensing. This analysis applies the costs of remote monitoring (\$13,000 to \$18,000) to each dam project in 2025.

²⁰³ Ruediger (2000), page 28.

²⁰⁴ Ruediger (2000), page 40.

²⁰⁵ Expiration dates for FERC-licensed dams provided by Alan Mitchnick, Senior Technical Expert, Federal Energy Regulatory Commission, received March 6, 2006.